

### Remarks

Claims 40-59 pend. All are rejected under 35 USC 103.

Applicants provide the following commentary on the combinations proffered by the Official Action in support of the rejections and respectfully request favorable reconsideration.

Claims 40-45 and 47-52 are rejected as obvious given Yasuda with Sonnichsen, then with Mock and Pettingell.

Yasuda: is directed to the use of a gold bead (~ 40nm) attached to F1-ATPase. The image of the gold bead is captured by CCD camera. Sequential images of off-axis movement of the centroid purports to create a 'spot' evidencing rotation.

The Official Action, recognizing that Yasuda fails to disclose various aspects of the present invention, turns secondarily to Sonnichsen.

Sonnichsen is concerned with plasmon damping of gold nanoparticles, which include spheres and rods. An express optical use contemplated by Sonnichsen is Surface Enhanced Raman Scattering (SERS). SERS is typically employed to study monolayers of materials adsorbed on metal surfaces, e.g. electrodes. Consistently, Sonnichsen examines plasmon properties by spin casting solutions of the particles onto glass slides and subjecting them to Transmission Electron Microscopic (TEM) study.

The Official Action opines that the artisan would be inclined to substitute the gold nanorods of Sonnichsen with the beads of Yasuda and that this would thus lead to the present invention as claimed.

Applicants disagree.

First, there is no objective reason why an artisan concerned with detectors for rotational motion at a molecular level would ever look to Sonnichsen. Sonnichsen is not concerned with motion detectors, let alone rotating ones, yet let alone again to one at a molecular level. Sonnichsen instead has an interest in things like SERS, the concerns of which (monolayers, metal surfaces, static environments) are far different from those of the instant invention. Even under the loosened context of KSR, there is no objective basis to seek out the teachings of Sonnichsen.

Second, even if *pro arguendo* the artisan did, for some reason, look to Sonnichsen the combination that would fairly result with Yasuda would not be the one posited in the Official Action. That is, in the combination, the artisan would more likely be expected to explore the aspects of the gold nanospheres in Sonnichsen. This is consistent with the beads Yasuda uses, perhaps to select a more auspicious size consistent with the damping properties reported upon.

Third, even supposing the gold nanorods of Sonnichsen were considered by the reader-artisan as substitutes for the beads in Yasuda, there would be no reason to change the observation technique Yasuda uses. That is, the combination of references would still envision attaching the nanorod in a position where it would be detected by CCD in the sequential imaging fashion of Yasuda as a moving spot. No alteration of this CCD ‘spot’ technique, especially to the degree of radically re-rigging of Yasuda to filter and observe polarized first and second wavelengths as contemplated by the instant invention, would be needed for this combination to presumably work. Sonnichsen, of course, measures in a static environment (glass slide and TEM), and hence has nothing to offer by way of motion detection.

Indeed, neither the primary or secondary reference mentions or remotely suggests observing first and second wavelengths of light in an alternating polarized fashion from light scattered by an object such as a nanorod, much less that this feature could be surprisingly utilized to construct a “blinking” detector at a molecular level.

The foregoing remarks are meant to establish that the combination of Yasuda plus Sonnichsen would not reasonably occur given the disparate use settings of the two (e.g. motion detection on the one hand; static concerns of SERS on the other, as *supra*); and in any event does not reasonably suggest critical aspects of the present invention, e.g. that a nanorod, *inter alia*, would be able to scatter polarized light of first and second wavelengths whereby this could be observed by filtering, and that this could be used as a detection modality for a molecularly sized rotating arm.

Rather, the objective combination of these two references would lead to the mere swapping of Yasuda’s bead for one of Sonnichsen’s rods. Importantly, nothing else need be changed: no first or second wavelengths need be detected nor polarizing filters used. This resultant combination, operable perhaps for Yasuda’s end use, is far removed from that claimed.

Mock and Pettigell are cited for alleged inherency in red and green light emissions (Mock) and polarizing filters (Pettigell). But both of these presuppose that these types of features would arise or be suggested in the combination of Yasuda and Sonnichsen. But as noted, Yasuda’s use of a nanorod in lieu of a bead is not seen to require the information of Mock or Pettigell. Yasuda is sufficient unto itself in this combined context, and the modifications alleged by these third and fourth references are unneeded.

It is respectfully submitted that the Official Action has relied upon prohibited hindsight in casting the rejection. And that only with benefit of the applicants' disclosure is the rejection able to be constructed in the manner articulated.

Claims 54-59 are rejected under 35 USC 103. Cited references are Yasuda, Sonnichsen, and Mock.

Applicants refer to and incorporate herein the reasoning set forth above as to why the combination fails to make obvious the claims.


Claims 46, 53 are rejected under 35 USC 103. References cited are Yasuda, Sonnichsen, Mock, Pettigell, and Felder (directed to anchor oligonucleotides).

Applicants refer to and incorporate herein the reasoning set forth above as to why the combination fails to make the claims obvious, and note specifically that Felder does not move the combination of Yasuda and Sonnichsen any closer than that stated above.

Applicants request favorable reconsideration and passage to issuance of the present claims as representing a patentable distinction from the art.

Applicants fervently believe the instant case is in condition for allowance, passage to which is earnestly solicited.

Respectfully submitted,

  
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